

**CLAIMS:**

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1. An improved process for the preparation of 2-aryl propionic acids, which comprises the steps of :

- (i) reacting an aryl compound selected from an arylalkyl halide having general formula I, aryl alcohol having general formula II or aryl substituted olefins having general formula III, as shown in the accompanying drawings, wherein,  $R_1$  is aryl, substituted aryl, naphthyl or substituted naphthyl groups,  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  are independently hydrogen, alkyl, aryl, arylalkyl or cycloaliphatic groups with or without substituents and X is other a halogen atom selected from chlorine, bromine, iodine with a halide promoter, an organic acid, water and a palladium catalyst in an organic solvent selected from ketones or cyclic ethers in carbon monoxide atmosphere under homogeneous conditions, at a temperature ranging between 30 to 130°C, for a period ranging between 0.3 to 4 hrs, at pressures ranging between 50 to 1500 psig,
- (ii) cooling the reaction mixture to ambient temperature,
- (iii) flushing the reaction vessel with inert gas,
- (iv) removing the solvent by conventional methods, and
- (v) separating the catalyst and isolating 2 aryl propionic acid having formula IV as shown in the accompanying drawings, wherein,  $R_1$  is

aryl, substituted aryl, naphthyl or substituted naphthyl groups, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are independently hydrogen, alkyl, aryl, arylalkyl, cycloaliphatic groups with or without substituents.

2. A process as claimed in claim 1 wherein catalyst is selected from the group of palladium (0) or palladium (II) compound comprising palladium chloride, palladium bromide, palladium iodide, bis(triphenylphosphino) dichloro palladium(II), bis(triphenylphosphino) dibromo palladium(II), bis(triparatolylphosphino) dichloro palladium(II), bis(tricyclohexylphosphino) dichloro palladium(II), bis(triethylphosphino) dichloro palladium(II), bis(triisopropylphosphino) dichloro palladium(II), tetrakis(triphenylphosphino) palladium(0), dibenzylideneacetone-palladium(0), cyclooctadiene dichloro palladium(II), bisbenzonitriledichloro palladium(II), acetylacetonato palladium(II) and bisacetonitrile dichloro palladium(II).

3. A process as claimed in claim 1 wherein the halide promoter is selected from the group comprising halide salts of alkali metals and quaternary ammonium or phosphonium halides.

4. A process as claimed in claim 1 wherein the halide promoter is selected from the group of halide salts of alkali metals consisting of lithium

chloride, sodium chloride, potassium chloride, lithium iodide, lithium bromide, sodium bromide, sodium iodide, potassium bromide, and potassium iodide.

A process as claimed in claim 1 wherein the halide promoter is selected from the group of quaternary ammonium or phosphonium halides consisting of tetrabutyl ammonium chloride, tetrabutyl ammonium bromide, tetrabutyl ammonium iodide, tetrabutyl phosphonium chloride, tetrabutyl phosphonium bromide and tetrabutyl phosphonium iodide.

6. A process as claimed in claim 1 wherein the organic acid is selected from para toluene sulphonic acid, methane sulphonic acid and trifluoromethane sulphonic acid.

7. A process as claimed in claim 1 wherein the organic solvent is selected from the group of ketones comprising methyl ethyl ketone, methyl isobutyl ketone, diethyl ketone, methyl n-propyl ketone, acetophenone or cyclic ethers such as tetrahydrofuran, dioxan.

8. A process as claimed in claim 1 wherein the concentration of the catalyst is one mole of catalyst for every 50 to 50000 moles of the compound having formula I.

9. A process as claimed in claim 8 wherein the concentration of the catalyst is one mole of catalyst for every 100 to 6000 moles of the compound having formula I.

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10. A process as claimed in claim 1 wherein the concentration of the catalyst is one mole of catalyst for every 150 to 2000 moles of compounds having formula I, formula II or formula III.
11. A process as claimed in claim 1 wherein the amount of halide promoter per gram mole of the catalyst is in the range of 5 to 500 moles.
12. A process as claimed in claim 11 wherein the amount of halide promoter per gram mole of the catalyst is in the range of 10 to 300 moles.
13. A process as claimed in claim 12 wherein the amount of halide promoter per gram mole of the catalyst is in the range of 25 to 150 moles.
14. A process as claimed in claim 1 wherein the amount of organic acid per gram mole of catalyst may be in the range of 5 to 500 moles.
15. A process as claimed in claim 14 wherein the amount of organic acid per gram mole of catalyst may be in the range of 10 to 300 moles.
16. A process as claimed in claim 15 wherein the amount of organic acid per gram mole of catalyst may be in the range of 25 to 150 moles.
17. A process as claimed in claims 1 wherein the amount of water is in the range of 1 to 6% (v/v) of the total reaction mixture.
18. A process as claimed in claims 17 wherein the amount of water is in the range of 3 to 5% (v/v) of the total reaction mixture.
19. A process as claimed in claim 1 wherein the reaction is carried out even at low pressures of carbon monoxide upto 50 psig.

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